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Figure 1

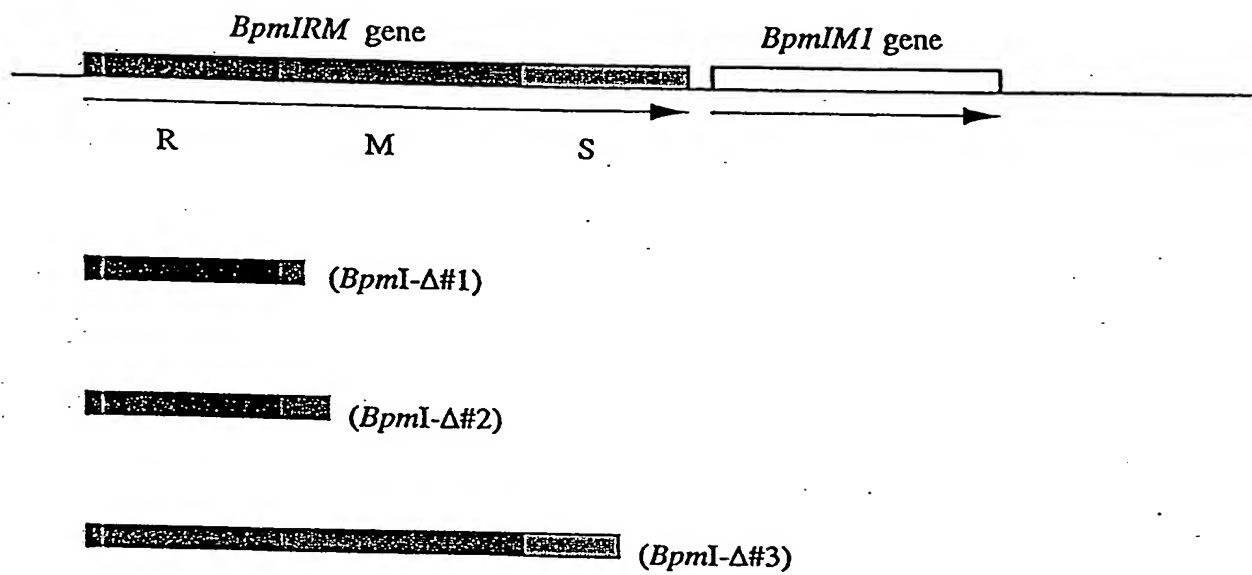


Figure 2.

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1  ATGAATCAATTAATTGAAAATGTTAATCTACAAAAATTAAGGGGTGGGTATTACACCCCT
   -----+-----+-----+-----+-----+-----+-----+-----+
61  M N Q L I E N V N L Q K L R G G Y Y T P
   AAAGTTATTGCTGACTTTTTATGTCAATGGAGTATTCAAGATGACACAAAGAGTGTACTT
   -----+-----+-----+-----+-----+-----+-----+-----+
121 K V I A D F L C Q W S I Q D D T K S V L
   GAACCCAGTTGTGGAGATGGTAATTTTATTGAATCGGCAATACTTAGGTTCAAAGAACTT
   -----+-----+-----+-----+-----+-----+-----+-----+
181 E P S C G D G N F I E S A I L R F K E L
   AGTATAGATAATGAACAACTTAAAGGAAGAATTACAGGAGTAGAGCTAATTGAAGAAGAA
   -----+-----+-----+-----+-----+-----+-----+-----+
241 S I D N E Q L K G R I T G V E L I E E E
   GCTTTGAAAGTTCAAAATCGAGCAAATGAGTTGGGGGTTGATAAAAACTCAATAGTAAAT
   -----+-----+-----+-----+-----+-----+-----+-----+
301 A L K V Q N R A N E L G V D K N S I V N
   AGTGACTTCTTTCAATTTGTAAAAGATAATAAGAATAAAAAATTTGATACTATTATTGGT
   -----+-----+-----+-----+-----+-----+-----+-----+
361 S D F F Q F V K D N K N K K F D T I I G
   AATCCACCATTCATAAGATACCAAACTTTCTGAAGAGCATCGTAGTATAGCCATGGAA
   -----+-----+-----+-----+-----+-----+-----+-----+
421 N P P F I R Y Q N F P E E H R S I A M E
   ATGATGGAGGAAGTAGGTTTAAAACCTAATAAACTTACAAATATCTGGGTTCCATTCTA
   -----+-----+-----+-----+-----+-----+-----+-----+
481 M M E E L G L K P N K L T N I W V P F L
   GTGGTATCTGCTACATTACTTAATGAACAAGGAAAGATGGCTATGGTTATACCGGCTGAA
   -----+-----+-----+-----+-----+-----+-----+-----+
541 V V S A T L L N E Q G K M A M V I P A E
   TTATTTTCAGGTAAAGTATGCAGCAGAAACAAGAAATTTTTTATCAAAGTTTTTCGATCGT
   -----+-----+-----+-----+-----+-----+-----+-----+
601 L F Q V K Y A A E T R I F L S K F F D R
   ATCACTATAATTACATTTGAAAACTTGTTTTTGAAAATATCCAACAGGAAGTTATACTA
   -----+-----+-----+-----+-----+-----+-----+-----+
661 I T I I T F E K L V F E N I Q Q E V I L
   CTTCTTTGTGAAAAGAAAGTTAATAAAGGTAAAGGAATTCGGGTTATTGAATGCGAGAAC
   -----+-----+-----+-----+-----+-----+-----+-----+
721 L L C E K K V N K G K G I R V I E C E N
   TTAGATGGATTAAATTCCATTGATTTTGTAGCTATAAATGGTTCAAATGTTAAACCTATT
   -----+-----+-----+-----+-----+-----+-----+-----+
781 L D G L N S I D F V A I N G S N V K P I
   GAACACCGTACTGAAAAGTGGACAAAGTATTTCTTAAACGAAGATGAAATACTTCTTTTA
   -----+-----+-----+-----+-----+-----+-----+-----+
841 E H R T E K W T K Y F L N E D E I L L L
   CAGAGTTTAAAGGAAGACAAACGCGTTAAAAATTGTAATGACTATTTTAAGACAGAAGTT
   -----+-----+-----+-----+-----+-----+-----+-----+
901 Q S L K E D K R V K N C N D Y F K T E V
   GGCTTAGTTACTGGACGAAACGAATTCTTTATGATGAAAAGAAAACCAAGTAAAGAAATGG
   -----+-----+-----+-----+-----+-----+-----+-----+
961 G L V T G R N E F F M M K E N Q V K E W
   AATCTAGAAGAATATACAATACCTGTTACAGGTAGGTCCAATCAGTTAAAAGGTATAACA
   -----+-----+-----+-----+-----+-----+-----+-----+
1020 N L E E Y T I P V T G R S N Q L K G I T

```

1021	TTTACAGAAAAATGATTTTTCATGAAAATTC AATGGAACAAAAGGCAATTCACCTATTTTGG	1080
	F T E N D F H E N S M E Q K A I H L F L	
1081	CCACCAGATGAAGATTTTGAAAAGTTACCGATTGAGTGTCAAAATTATATCAAGTATGGG	1140
	P P D E D F E K L P I E C Q N Y I K Y G	
1141	GAAGAAAAAGGCTTCCATCAAGGCTATAAAACCAGAATTAGAAAAACGTTGGTATATAACT	1200
	E E K G F H Q G Y K T R I R K R W Y I T	
1201	CCATCTAGATGGGTTCCAGATGCTTTTGCTTTAAGACAGGTTGATGGCTATCCAAAAC TA	1260
	P S R W V P D A F A L R Q V D G Y P K L	
1261	ATTTTAAATGAAACCGACGCTTCTTCTACTGATACAATTCATAGGGTTAGATTTAAAGAA	1320
	I L N E T D A S S T D T I H R V R F K E	
1321	GGTATAAATGAAAAGTTAGCCGTAGTTTCATTTTGAAC TACTCACTTTTGCATCTTCA	1380
	G I N E K L A V V S F L N S L T F A S S	
1381	GAAATAACGGGGAGAAGTTATGGTGGTGGTGTATGACATTCGAACCAACTGAAATTGGA	1440
	E I T G R S Y G G G V M T F E P T E I G	
1441	GAAATCCTAATACCTTCCTTTTGATAACTTATCCATTGATTTTGATAAAATTGATGCCTTA	1500
	E I L I P S F D N L S I D F D K I D A L	
1501	ATTCGAGAAAAGGAGATTGAAAAAGTCCTTGATATTGTTGATGAAGCTTTACTTATAAAA	1560
	I R E K E I E K V L D I V D E A L L I K	
1561	TATCATGGGTTTAGTGAGAAAGAAGTAAAACAGCTTCGAGGGATATGGAAGAACTTTCT	1620
	Y H G F S E K E V K Q L R G I W K K L S	
1621	CAGAGAAGAAACAATAGAACGAAGAAATAA	1650
	Q R R N N R T K K *	

1	ATGCATATAAGT	60
	M H I S E L V D K Y K A H R S T F L K P	
61	ACTTATAATGAAACTCAACTAAGGAATGATTTTATAGACCCACTTCTAAAATCTTTAGGA	120
	T Y N E T Q L R N D F I D P L L K S L G	
21	TGGGATGTTGATAATACCAAAGGAAAAACACATATTCTAAGAGATGTCATTCAAGAAGAA	180
	W D V D N T K G K T H I L R D V I Q E E	
81	TACATAGAAATAAAAGATGAGGAGACAAAGAAAAATCCAGATTATACACTTCGTATAAAC	240
	Y I E I K D E E T K K N P D Y T L R I N	
41	GGTACGAGAAAGCTGTTTGTAGAGGTTAAGAAACCGTCTTTTAATATTTTGAAATCAGCT	300
	G T R K L F V E V K K P S F N I L K S A	
01	AAAGCAGCCTTCCAAACAAGAAGATATGGTTGGAGTGTAACTTGGTATTTTCACTACTT	360
	K A A F Q T R R Y G W S A N L G I S V L	
61	ACAAATTTTCGAGCATCTAGTTATTTATGATTGTAGATATACGCCTGACAAATCCGACAAT	420
	T N F E H L V I Y D C R Y T P D K S D N	
21	GAACATATTGCTAGATATAAAGTTTTCTCTTACGAGGAATATGAAGAAGCATTTGATGAA	480
	E H I A R Y K V F S Y E E Y E E A F D E	
81	ATAAAGGATATAATTTTCATATGAGTCAGCCAACCTCAGGTGCTCTGGACGAAATGTTTGAT	540
	I K D I I S Y E S A N S G A L D E M F D	
41	GTAATACAAAGAGTTGGTGAAACGTTTGACGAGTATTTTTTACAGCAAATTGAGAATTGG	600
	V N T R V G E T F D E Y F L Q Q I E N W	
501	CGCGAAAAGCTAGCTAAAAGTGAATTAATAACACCGAATTAGGTGAAGAGGACGTC	660
	R E K L A K T A I K N N T E L G E E D V	
561	AATTTTATTGTCCAAAGACTATTAAACAGAATTATTTTTCTTAGAGTTTGTGAAGATAGA	720
	N F I V Q R L L N R I I F L R V C E D R	
721	ACCATTGAAAAATATGAAACAATTAAAAGTATAAAAAACTATGAGGAATTAAAAGATCTG	780
	T I E K Y E T I K S I K N Y E E L K D L	
781	TTTCAAAGTCTGATAGGAAATTTAATTCAGGTCTCTTTGACTTCATAGATGATACGCTC	840
	F Q K S D R K F N S G L F D F I D D T L	
841	TTGCTTGAGGTTGAAATTGATTGCAATGTATTGATAGAAATTTTATGATTTATATTTT	900
	L L E V E I D S N V L I E I F S D L Y F	
901	CCACAAAGCCCATATGATTTTTCTGTTGTCGATCCAACAATATTAAGCCAGATATATGAA	960
	P Q S P Y D F S V V D P T I L S Q I Y E	
961	CGTTTTCTAGGTCAAGAAATAATTATAGAGTCAGGTGGTACATTTACATTACGGAGTCA	1020
	R F L G Q E I I I E S G G T F H I T E S	

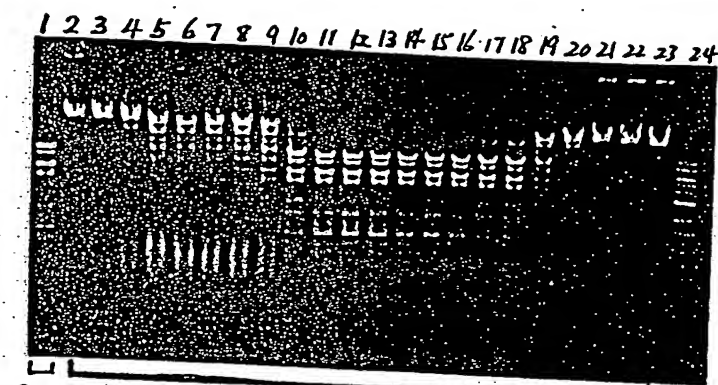
Figure 3. (continued)

	CCAGAGTTGCGGCGTCCAATGGTGTTGTTCCTCAACTCCAAAAATTATCGTGAACAGATA	
1021	-----+-----+-----+-----+	
	P E V A A S N G V V P T P K I I V E Q I	1080
	GTGAAAGACACTTTTAACGCCCTTACGGAAGGCAAAAATTATATGAGCTATGTAACCTTA	
1081	-----+-----+-----+-----+	
	V K D T L T P L T E G K K F N E L C N L	1140
	AAAATAGCAGATATATGTTGTGGATCAGGAACCTTCCTAATTTCAAGTTATGACTTTCTA	
1141	-----+-----+-----+-----+	
	K I A D I C C G S G T F L I S S Y D F L	1200
	GTAGAGAAAAGTAATGGAAGAAGATAATAGAAGAGAACATCGATGATTCAGATTTAGTATAT	
1201	-----+-----+-----+-----+	
	V E K V M E K I I E E N I D D S D L V Y	1260
	GAACTGAAGAAGGGCTAATTTTGACACTTAAAGCAAAAAGAAATATCTTGAGAAATAAT	
1261	-----+-----+-----+-----+	
	E T E E G L I L T L K A K R N I L E N N	1320
	TTGTTTGGTGTTGATGTTAATCCATACGCTGTTGAAGTAGCTGAGTTTCAAGTTTATTATTA	
1321	-----+-----+-----+-----+	
	L F G V D V N P Y A V E V A E F S L L L	1380
	AAGCTATTAGAAGGTGAGAATGAGGCATCGGTTAATAATTTTCATTCACGAGCATGAGGAT	
1381	-----+-----+-----+-----+	
	K L L E G E N E A S V N N F I H E H E D	1440
	AAAATATTACCGGATTTAACATCTATTATTAAATGTGGAAACAGCTTAGTAGATAATAAG	
1441	-----+-----+-----+-----+	
	K I L P D L T S I I K C G N S L V D N K	1500
	TTTTTTGAATTCATGCCAGAATCGTTAGAGGACGATGAAATCTTATTTAAGGCTAATCCA	
1501	-----+-----+-----+-----+	
	F F E F M P E S L E D D E I L F K A N P	1560
	TTTGAATGGGAAGAGGAGTTTCCAGATATTATGGCAAATGGTGGCTTTGATGCTATTATA	
1561	-----+-----+-----+-----+	
	F E W E E E F P D I M A N G G F D A I I	1620
	GGAAATCCACCTTATGTTTGAATACAGAACATGAAAAATATAGTCCTGAGGAAATTGAA	
1621	-----+-----+-----+-----+	
	G N P P Y V R I Q N M K K Y S P E E I E	1680
	TATTATCAATCAAAAGACTCTGAATATACTGTTGCAAAAAAGAAACAGTTGACAAGTAT	
1681	-----+-----+-----+-----+	
	Y Y Q S K D S E Y T V A K K E T V D K Y	1740
	TTTTTATTATTATGAGAGAGCATTAATATTACTCAATCCTACTGGGCTGTTGGGTTATATA	
1741	-----+-----+-----+-----+	
	F L F I E R A L I L L N P T G L L G Y I	1800
	ATACCGCATAAATCTTTATTACAAAAGGTGGTAAGGAAC TAAGAAAGTTCATAGCTGAA	
1801	-----+-----+-----+-----+	
	I P H K F F I T K G G K E L R K F I A E	1860
	AAACATCAAATATCAAAAATTATAAATTTTGGTGTTACACAGGTCTTTCCAGGAAGAGCG	
1861	-----+-----+-----+-----+	
	K H Q I S K I I N F G V T Q V F P G R A	1920
	ACATATACGGCTATTTTAATTATCCAAGCAAATAAAATGGCACAGTTCAAGTATAAGAAA	
1921	-----+-----+-----+-----+	
	T Y T A I L I I Q A N K M A Q F K Y K K	1980
	GTAAGTAATATATCAGCAGAAACCCTAGATTCTGAAGAAAATACGTGTGTTTATAGCTCA	
1981	-----+-----+-----+-----+	
	V S N I S A E T L D S E E N T C V Y S S	2040

Figure 3. (continued)

	GAAAAGTATAATTCTGACCCCTTGATATTTTATCTCCTGAAACAGAAGCTGTTTTACT	
2041	-+-----+	2100
	E K Y N S D P W I F L S P E T E A V F T	
	AAATTTACAGAAGCTCAATTTGAGAAACTTGAGAAATCACTGATATAAGTGTAGGACTA	
2101	-+-----+	2160
	K F T E A Q F E K L G E I T D I S V G L	
	CAAACAAGCGCTGATAAAATATATATTTTATTCTGAAAATGAAACTTCAGATACATAT	
2161	-+-----+	2220
	Q T S A D K I Y I F I P E N E T S D T Y	
	ATATTTAATTATAAAGGGAAAAAGATATGAAATAGAAAAATCTATATGTTGCCAGCTATC	
2221	-+-----+	2280
	I F N Y K G K R Y E I E K S I C C P A I	
	TATGACTTATCTTTTGGTTCTTTTGAAAGCATTCAGGGAAATGCACAAATGATATTCCT	
2281	-+-----+	2340
	Y D L S F G S F E S I Q G N A Q M I F P	
	TATGAAATCAGAGATGAAGAAGCATATCTACTAGAGGAAGAAACGCTTGAAAATGATTAT	
2341	-+-----+	2400
	Y E I R D E E A Y L L E E E T L E N D Y	
	CCTCTTGCTTGGAATTATTTGAATGAGTTTAAAGAAGCTCTTGAAAAAGAAGCTTACAA	
2401	-+-----+	2460
	P L A W N Y L N E F K E A L E K R S L Q	
	GGCCGTAATCCGAAATGGTATCAATATGGTCGGTCCCAGTTTATCAAAATTCATGAT	
2461	-+-----+	2520
	G R N P K W Y Q Y G R S Q S L S K F H D	
	AAAGAAAACTGATATGGACCGTACTTGCTACGAAACCCCGTATGTAAGTAGGAAT	
2521	-+-----+	2580
	K E K L I W T V L A T K P P Y V L D R N	
	AACCTGTTATTTACTGGTGGTGGAAACGGACCGTATTATGGTTTAATTAACCAATCTATT	
2581	-+-----+	2640
	N L L F T G G G N G P Y Y G L I N Q S I	
	TACTCTTTGCATTATTTTTTAGGTATTCTTTACATCCTGTAATAGAAAGTATGGTAAAA	
2641	-+-----+	2700
	Y S L H Y F L G I L S H P V I E S M V K	
	GCAAGGGCCAGTGAATTTAGGGGATCATATTATTCTCATGGAACAATTTATTGAGAAA	
2701	-+-----+	2760
	A R A S E F R G S Y Y S H G K Q F I E K	
	ATCCCAATTAGAAAGATTGATTTTGATGATCAAGATGAGGTAGACAAATATAATACGGTG	
2761	-+-----+	2820
	I P I R K I D F D D Q D E V D K Y N T V	
	GTCACAACAGTAGAAAAATTAATTATAACTACCGATAGAATTAAGTGAGAGCAATGGA	
2821	-+-----+	2880
	V T T V E K L I I T T D R I K S E S N G	
	CCCCGGAGGAGAATGTTAAGAAGAAGGTTAGATGCTTTGTCTAATCAACTTATCCAGGTT	
2881	-+-----+	2940
	P R R R M L R R R L D A L S N Q L I Q V	
	ATTAATGAACTTTATAATATCAGTGACGAAGAATATACGACAGTTTGAATGATGAAATG	
2941	-+-----+	3000
	I N E L Y N I S D E E Y T T V L N D E M	
	TTGACAGCGCGTTAGGAGAAGAAAAATGA	
3001	-+-----+	3030
	L T A A L G E E K *	

Figure 4



BpmI Heparin Sepharose fractions with
recombinant BpmI.

Figure 5

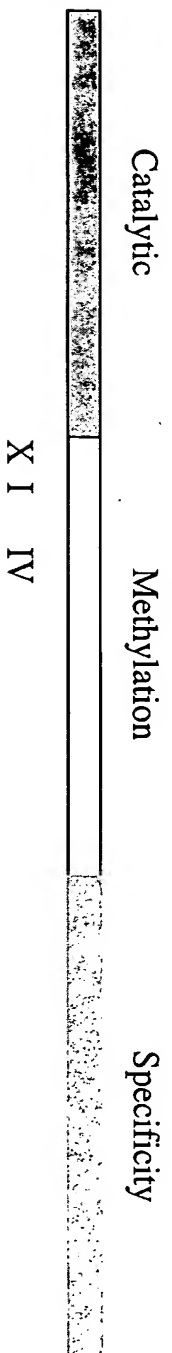


Figure 6

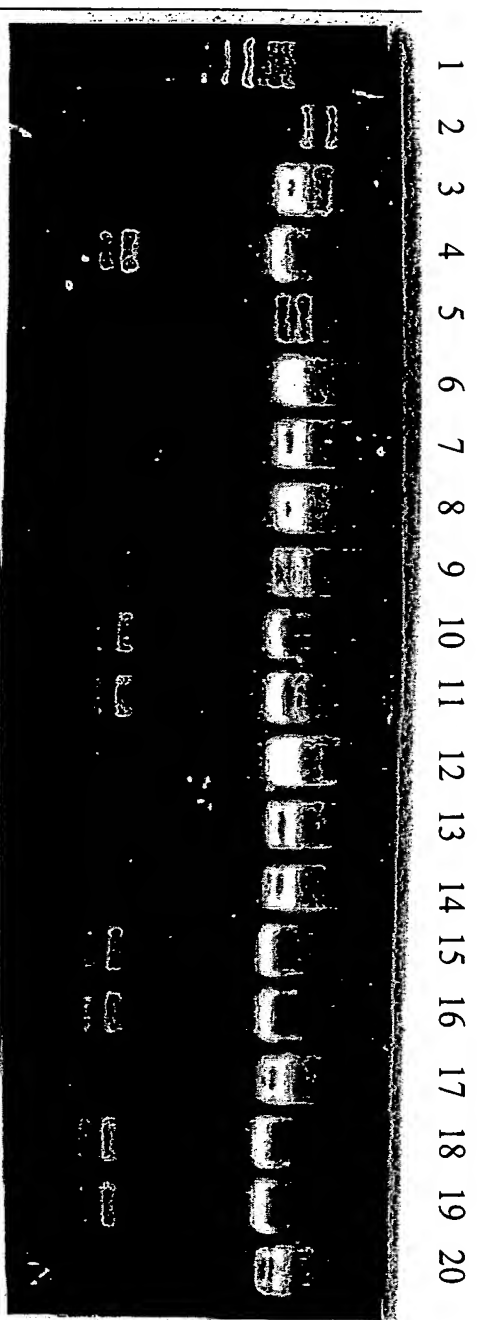


Figure 7

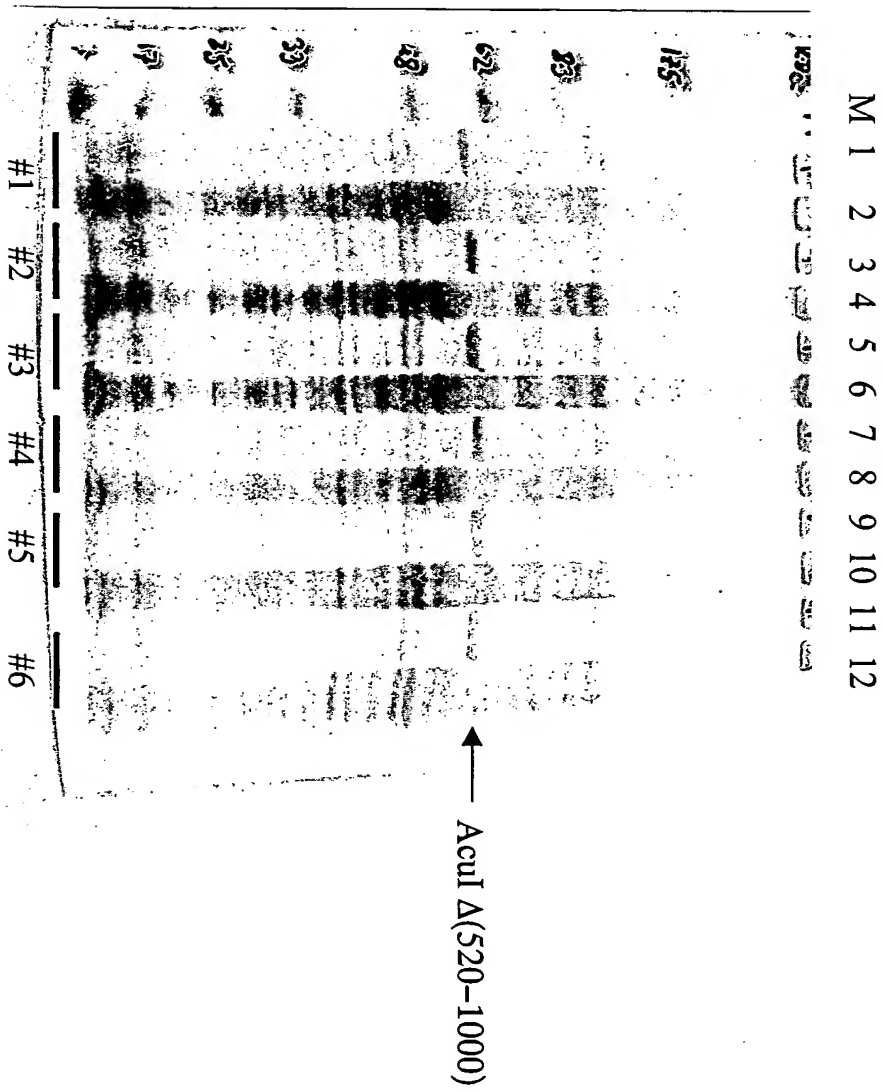
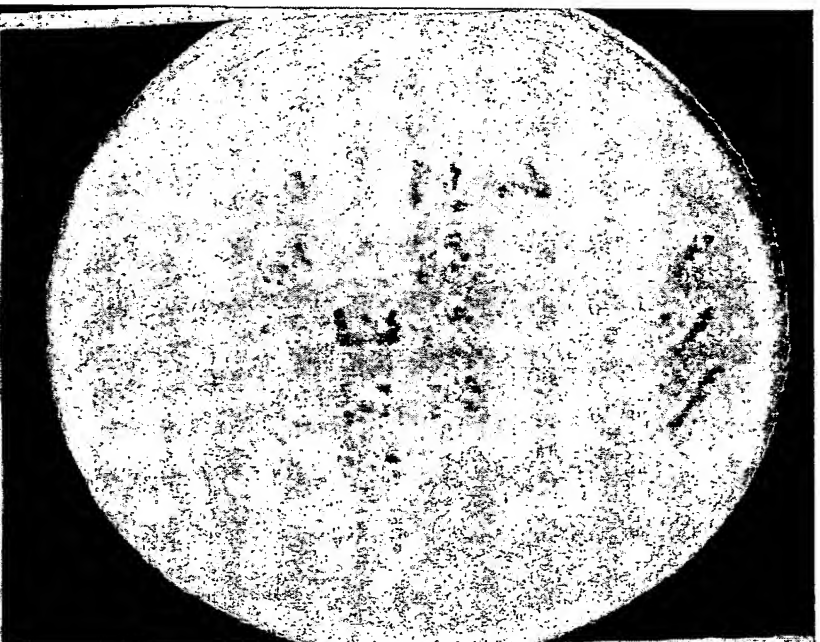


Figure 8



BstYI mutant (blue)

Vector control (white)

Blue colony #1

Blue colony #2

Blue colony #3

Blue colony #3